The Zero Emission Coal Alliance

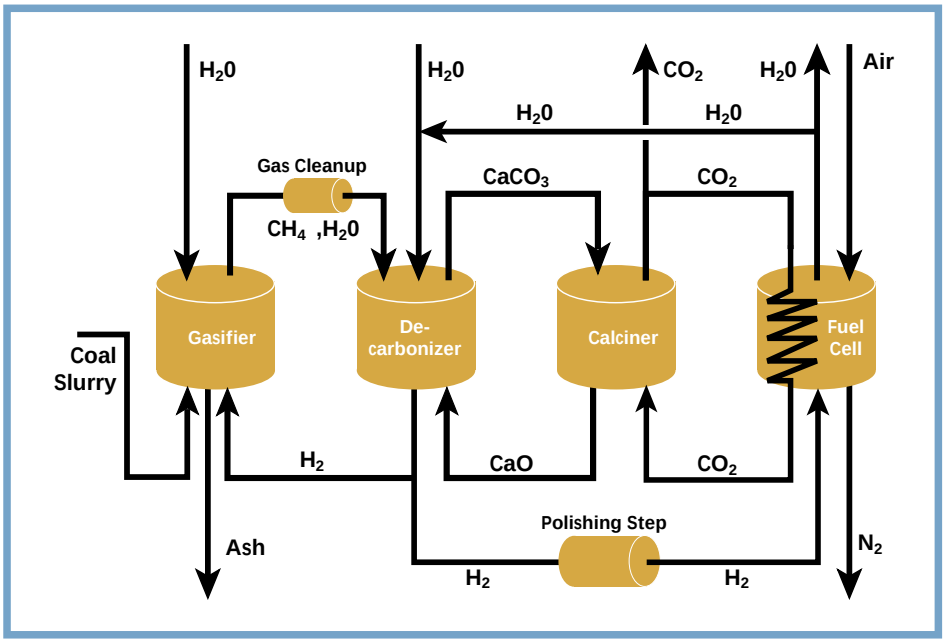
Mission

In order to ensure the future of coal, North America's most abundant and economic fossil fuel resource, the Zero Emission Coal Alliance (ZECA) is defining a potentially economical Zero Emission Coal (ZEC) concept based on new applications of well-known science. ZECA's research demonstrates the possibility of at least doubling the net efficiency of coal-based power generation while at the same time producing a stream of relatively pure CO_2, which can be permanently and safely sequestered.

Background

Los Alamos National Laboratory has recently applied for patents on a novel process for producing hydrogen from coal and water. It builds on CONSOL's successful CO_2 acceptor process, piloted in the 1970's. While still relying on cycling of calcium oxide (CaO) to drive the production of hydrogen, the Los Alamos process has significantly added to and enhanced the technology to produce separate streams of hydrogen and CO_2. The hydrogen is used to generate emission-free electricity and the CO_2 is reacted with abundant magnesium silicates to be permanently sequestered as a solid, inert, and stable mineral carbonate.

Current work indicates that for an additional 1¢/kWh, electricity can be generated from coal by this method with no emissions. This cost compares very favorably with other current generation/sequestration scenarios. In addition, truly permanent sequestration of CO_2 is possible.



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Seventeen entities from the United States and Canada with interests in coal production and the use of coal for electrical generation have agreed to contribute $50,000 each to form ZECA. In addition, federal agencies and industrial organizations are participating as technical advisors. Because the technology fits with DOE Clean Coal Technology programs and Vision 21, the Department of Energy has expressed a high level of interest in the project. The Alliance plans to pilot the process within five years to achieve eventual commercialization.

Phase I

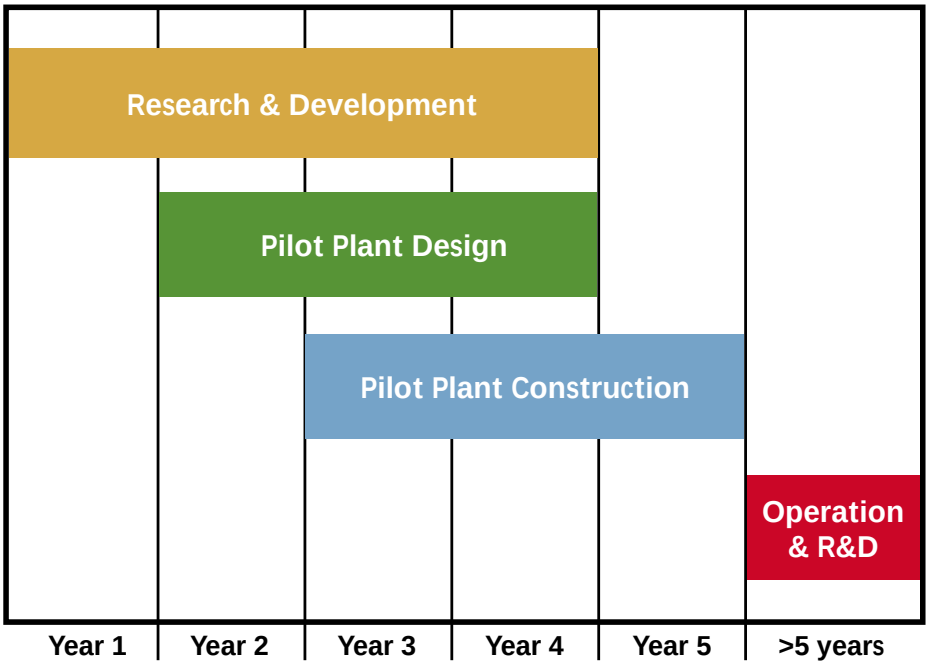
ZECA is currently structured with a technology team headed by Dr. Hans Ziock, senior scientist at Los Alamos National Laboratory, and a business team headed by Alan Johnson, President of The Coal Association of Canada.

Funds for Phase I will allow ZECA to develop the comprehensive business and technical plans needed to build a pilot plant within five years. Most of this work will be done by Nexant, a third party consultant working

closely with the management teams. Regular meetings will be held with all of the Alliance members to set terms of reference and monitor progress. The business plan is expected to provide for the ultimate creation of an entity to continue this initiative after the project definition stage and, as such, will deal with all aspects of intellectual property including preferred positions for the original participants. The technical plan will outline in detail the critical path required to ensure that the best possible design is achieved in the target time frame.

ZECA is ready to proceed with Phase I. The alliance would welcome additional participants to ensure a broad spectrum of industry expertise. As alliance members, participants in Phase I have the opportunity to help guide the work conducted under the supervision of the technical and business committees, as well as the opportunity to serve or participate on those committees at their discretion.

Because ZEC technology is coal based, produces no emissions, and is likely to be economically competitive, it is a desirable way to address perceived greenhouse gas problems. It is also potentially applicable to other processes where hydrogen could be used as a reductant or clean energy source, and it could be especially beneficial in other mining-related activities such as smelting and refining.



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